

COPY OF JUNE 2, 2004

SUBMISSION

## Auto-Reply Facsimile Transmission



TO:

Fax Sender at 215 419 7075

Fax Information

Date Received:

6/2/2004 12:13:39 PM [Eastern Daylight Time]

Total Pages:

13 (including cover page)

**ADVISORY:** This is an automatically generated return receipt confirmation of the facsimile transmission received by the Office. Please check to make sure that the number of pages listed as received in Total Pages above matches what was intended to be sent. Applicants are advised to retain this receipt in the unlikely event that proof of this facsimile transmission is necessary. Applicants are also advised to use the certificate of facsimile transmission procedures set forth in 37 CFR 1.8(a) and (b), 37 CFR 1.6(f). Trademark Applicants, also see the Trademark Manual of Examining Procedure (TMEP) section 306 et seq.

Received  
Cover  
Page

=====>

FROM ATOPINA CHEMICALS, INC. PATENT

(FED: 6/2/04 11:26/ST: 11:19/NO: 4352261652 ? 1

09/088,707

PATENT

### CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8)

I hereby certify that this paper (along with any paper referred to as being transmitted therewith) is being facsimile transmitted to the United States Patent and Trademark Office (Fax No. 202-832-2200).

Dated June 2, 2004

Michelle Mullis

(Name of person faxing paper)

*Michelle T. Mullis*  
(Signature of person faxing paper)

Attorney Docket No. FR-AM0939 NP

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: BERTELO, et al.

Group Art Unit: 1711

Serial No.: 09/088,707

Examiner: Jeffrey C. Mullis

Filed: June 2, 1998

For: IMPACT ADDITIVE OF THE CORE/SHELL TYPE FOR THERMOPLASTIC POLYMERS

### AMENDMENT and RESPONSE to FINAL REJECTION under 37 C.F.R. §1.116

Mail Stop AF  
Commissioner for Patents  
Alexandria, VA 22313-1450

Dear Sir:

This Amendment is in response to the Final Office Action dated January 6, 2004, regarding the above-identified U.S. Patent Application. The Examiner has set a three-month period for response. A Petition for a two-month Extension of Time and the requisite fee are submitted herewith, thus making the response due on or before June 6, 2004.

PATENT

---

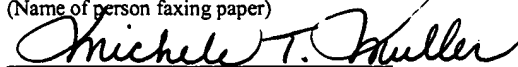
CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8)

I hereby certify that this paper (along with any paper referred to as being transmitted therewith) is being facsimile transmitted to the United States Patent and Trademark Office (Fax No. 703-872-9306).

Date: June 2, 2004

Michele Muller

(Name of person faxing paper)

  
(Signature of person faxing paper)

---

Attorney Docket No. FR-AM0939 NP

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant : BERTELO, et al.

Group Art Unit: 1711

Serial No.: 09/088,707

Examiner: Jeffrey C. Mullis

Filed: June 2, 1998

For: IMPACT ADDITIVE OF THE CORE/SHELL TYPE FOR THERMOPLASTIC  
POLYMERS

**AMENDMENT and RESPONSE to FINAL REJECTION under 37 C.F.R. §1.116**

Mail Stop AF  
Commissioner for Patents  
Alexandria, VA 22313-1450

Dear Sir:

This Amendment is in response to the final Office Action dated January 6, 2004, regarding the above-identified U.S. Patent Application for which the Examiner has set a three-month period for response. A Petition for a two-month Extension of Time and the requisite fee are submitted herewith, thus making the response due on or before June 6, 2004.

It is believed that the amendment and Response presents the rejected claims in better form for consideration on appeal. Reconsideration and Allowance of the present claims is requested.

A Revocation of Power of Attorney with New Power of Attorney and Change of Correspondence Address was submitted to the USPTO by Applicant on May 19, 2004. A copy of said Power of Attorney is attached to this Response, showing that the writer of this response has Power of Attorney in the case.

09/088,707

In the Specification

Please amend the title to change the cite "CORN" to "CORE".

In the Claims:

1. (previously presented) A polyvinyl chloride composition containing a core/shell impact additive, said impact additive comprising:

a) 70 % to 90 % by weight of a crosslinked elastomeric core which is composed:

1) of 20 % to less than 100 % by weight of a nucleus composed of a copolymer (I) of an n-alkyl acrylate, the alkyl group having a carbon number ranging from 5 to 12, of a polyfunctional crosslinking agent possessing unsaturated groups in its molecule, at least one of which is a vinyl group and optionally of a polyfunctional grafting agent possessing unsaturated groups in its molecule, at least one of which is an allyl group, and

2) of more than 0 and not more than 80 % by weight, of a covering composed of a copolymer (II) of n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 4 to 12, and a grafting agent possessing allyl groups, the said covering containing a molar amount of grafting agent ranging from 0.05 % to 2.5 %, said grafting agent having only allyl functional groups, all having the same reactivity and,

b) 30 % to 10 % by weight of a shell grafted onto the said core composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing a molar amount of alkyl acrylate ranging from 5 % to 40 %, or alternatively composed of a styrene acrylonitrile copolymer.

2. (previously presented) A composition according to Claim 1, characterized in that the said impact additive comprises from

a) 75% to 85% of a crosslinked elastomeric core,

b) 25% to 15% of a shell grafted onto the said core.

3. (previously presented) A composition according to Claim 1, characterized in that the alkyl group of the n-alkyl acrylate of the copolymer (I) has a carbon number ranging from 5 to 8 and

that the alkyl group of the n-alkyl acrylate of the copolymer (II) has a carbon number ranging from 4 to 8.

4. (previously presented) A composition according to Claim 1, characterized in that the alkyl group of the alkyl acrylates of the mixture forming part of the copolymers (I) and/or (II) has a carbon number ranging from 4 to 8.

5. (previously presented) A composition according to Claim 1, characterized in that the crosslinking agent is chosen from derivatives possessing at least two vinyl double bonds of  $\text{CH}_2=\text{C}<$ .

6. (previously presented) A composition according to Claim 1, characterized in that the cross linking agent is chosen from derivatives possessing one or a number of vinyl double bonds and at least one allyl double bond of  $\text{CH}_2=\text{CH}-\text{CH}_2-$ .

7. (previously presented) a composition according to Claim 1, characterized in that the crosslinking agent is 1,4-butanediol diacrylate.

8. (previously presented) A composition according to Claim 1, characterized in that the crosslinking agent is allyl acrylate or methacrylate.

9. (previously presented) A composition according to Claim 1, characterized in that the grafting agent is chosen from derivatives possessing at least two allyl double bonds of  $\text{CH}_2=\text{CH}-\text{CH}_2-$ .

10. (previously presented) A composition according to Claim 1, characterized in that the grafting agent is chosen from derivatives possessing one or more allyl double bonds and at least one vinyl double bond.

11. (previously presented) A composition according to Claim 1, characterized in that the grafting agent is diallyl maleate.

12. (previously presented) A composition according to Claim 1, characterized in that the grafting agent is allyl acrylate or methacrylate.
13. (previously presented) A composition according to Claim 1, characterized in that the nucleus of the crosslinked core has a molar amount of crosslinking agent and optionally of grafting agent of between 0.5% and 1.5%.
14. (previously presented) A composition according to Claim 1, characterized in that the covering of the crosslinked core has a molar amount of grafting agent of between 0.5% and 1.5%.
15. (previously presented) A composition according to Claim 1, characterized in that the statistical copolymer of the shell has a molar amount of alkyl acrylate of between 10% and 20%.
16. (previously presented) A composition according to Claim 1, characterized in that the n-alkyl acrylates used to form the copolymer (I) are n-pentyl acrylate, n-hexyl acrylate, n-heptyl acrylate and n-octyl acrylate.
17. (previously presented) A composition according to Claim 1, characterized in that the n-alkyl acrylates used to form the copolymer (II) are n-butyl acrylate, n-pentyl acrylate, n-hexyl acrylate, n-heptyl acrylate and n-octyl acrylate.
18. (previously presented) A composition according to Claim 16, characterized in that the n-alkyl acrylate for forming the copolymers (I) and (II) is n-pentyl acrylate.
19. (previously presented) A composition according to Claim 16, characterized in that the n-alkyl acrylate for forming the copolymers (I) and (II) is n-hexyl acrylate.
20. (previously presented) A composition according to Claim 16, characterized in that the n-alkyl acrylate for forming the copolymers (I) and (II) is n-octyl acrylate.
21. (previously presented) A composition according to Claim 16, characterized in that the n-alkyl acrylate for forming the copolymers (I) and (II) is n-octyl acrylate.
22. (previously presented) A composition according to Claim 16, characterized in that the n-alkyl acrylate for forming the copolymer (I) is n-octyl acrylate and that the n-alkyl acrylate for forming the copolymer (II) is n-butyl acrylate.
23. (previously presented) A composition according to Claim 1, characterized in that the linear or branched alkyl acrylates constituting the mixture of alkyl acrylates used for forming the copolymers (I) and/or (II) are ethyl acrylate, n-propyl acrylate, n-butyl acrylate, amyl acrylate, 2-

methylbutyl acrylate, 2-ethylhexyl acrylate, n-hexyl acrylate, n-octyl acrylate, n-decyl acrylate, n-dodecyl acrylate and 3,5,5-trimethylhexyl acrylate.

24. (previously presented) A composition according to Claim 23, characterized in that use is made of an amount by weight of n-alkyl acrylate at least equal to 10% by weight of the mixture of alkyl acrylates.

25. (previously presented) A composition according to Claim 24, characterized in that use is made of an amount by weight of n-alkyl acrylate of between 20% and 80% by weight of the mixture of alkyl acrylates.

26. (previously presented) A composition according to Claim 1 characterized in the n-alkyl acrylate is n-octyl acrylate.

27. (previously presented) A composition according to Claim 1 characterized in that the alkyl methacrylate used to form the shell is methyl methacrylate.

28. (previously presented) A thermoplastic polymer composition containing a core/shell impact additive, said impact additive comprising:

- a) 70 % to 90 % by weight of a crosslinked elastomeric core which is composed;
  - 1) of 20% to less than 100% by weight of a nucleus composed of a copolymer (I) of an n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 5 to 12, and of a polyfunctional crosslinking agent possessing unsaturated groups in its molecule, at least one of which is of a vinyl group, and optionally of a polyfunctional grafting agent possessing unsaturated groups in its molecule, at least one of which is an allyl group,
  - 2) of an amount above 0%, but not more than 80 % by weight, of a covering composed of a copolymer (II) of n-alkyl acrylate, the alkyl group of which has a carbon number ranging from 4 to 12, and a grafting agent possessing allyl groups, the said covering containing a molar amount of grafting agent ranging from 0.05 % to 2.5 %, said grafting agent having only allyl functional groups, all having the same reactivity, and
- b) 30 % to 10 % by weight of a shell grafted onto the said core composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing a molar amount of alkyl acrylate ranging from 5 % to 40 %, or alternatively composed of a styrene-acrylonitrile copolymer.



29. (previously presented) A composition according to Claim 28, characterized in that the thermoplastic polymer is composed of a least one polycondensate selected from the group consisting of polyesters, poly(butylenes terephthalate), polyamides, polyesteretheramides, polycarbonates and mixtures thereof.
30. (previously presented) A composition according to Claims 28, characterized in that the thermoplastic polymer is composed of one or a number of polymers selected from the group consisting of poly(alkyl methacrylate)s, particular poly (methyl methacrylate), optionally superchlorinated vinyl chloride homopolymers, copolymers which result from the copolymerization of vinyl chloride with at least one ethylenically unsaturated comonomer and which contain at least 80 % by weight of polymerized vinyl chloride; 1,1-dichloroethylene homopolymer, and 1,1-difluoroethylene homopolymer.
31. (previously presented) A composition according to Claim 30, characterized in that the thermoplastic polymer is a vinyl chloride homopolymer.
32. (previously presented) A composition according to Claim 29, characterized in that the thermoplastic polymer is a poly(butylenes terephthalate).
33. (previously presented) A composition according to Claim 28 characterized in that the content of impact additive is between 1 part and 30 parts by weight per 100 parts by weight of the thermoplastic polymer used.
34. (previously presented) A composition according to Claim 33, characterized in that the content of impact additive is between 5 parts and 10 parts by weight per 100 parts by weight of the thermoplastic polymer used.
35. (cancelled)
36. (previously presented) A composition according to Claim 30, characterized in that the thermoplastic polymer is a 1,1-difluoroethylene homopolymer.
37. (previously presented) A composition according to Claim 36, wherein the covering constitutes at least 5 % by weight of said core.
38. (previously presented) A composition according to Claim 37, wherein the covering constitutes at least 10% by weight of said core.
39. (previously presented) A composition according to Claim 1 wherein the core does not contain a covering.
40. (cancelled)

41. (previously presented) A composition according to claim 28, wherein said impact additive comprises:

a) 70-90 % by weight of a crosslinked elastomeric core compound of:

1) 20-90 % by weight of a nucleus comprising a copolymer of n-octyl acrylate and 1,4-butanediol diacrylate, and

2) surrounding said nucleus above 0% but not more than 80% by weight of a covering comprising a copolymer of n-octyl acrylate and diallyl maleate, and

b) surrounding said core, 30-10 % by weight of a shell grafted onto the said core, said shell composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing 2 molar amount of alkyl acrylate ranging from 5 % to 40 %. or alternatively composed of a styrene-acrylonitrile copolymer.

42. (previously presented) A composition according to claim 41, wherein said nucleus is about 90 % by weight of said core and said covering is about 10 % by weight.

43. (previously presented) A composition according to claim 42, wherein said shell consists essentially of poly(methyl methacrylate)

44. (previously presented) A composition according to claim 41, wherein said impact additive comprises from:

a) 75 % to 85 % of said crosslinked elastomeric core,

b) 25 % to 15 % of said shell grafted onto the said core.

45. (previously presented) A composition according to claim 41, or characterized in that the alkyl methacrylate used to form the shell is methyl methacrylate.

46. (previously presented) A composition according to claim 41, wherein the covering of the crosslinked core has a molar amount of grafting agent of between 0.5 % and 1.5 %.

47. (previously presented) A composition according to claim 1, wherein a) 2) is present in an amount more than 0% by weight.

48. (previously presented) A composition according to claim 1, wherein the composition contains a major amount of polyvinyl chloride and a minor amount of said impact additive.

Claims 49-70 (cancelled)

71. (previously presented) A thermoplastic polymer composition containing a core/shell impact additive, said impact additive comprising:

a) 70 % to 90 % by weight of a crosslinked elastomeric core which is composed:

1) of 20 % to less than 100 % by weight of a nucleus composed of a copolymer (I) of

- an n-alkyl acrylate, the alkyl group having a carbon number ranging from 5 to 12,

- a polyfunctional crosslinking agent possessing unsaturated groups in its molecule, at

least one of which is a vinyl group, and

- diallyl maleate as a grafting agent, and

2) of more than above 0% but not more than 80 % by weight of a covering composed of a copolymer (II) of

- the n-alkyl acrylate of copolymer (I)

- the polyfunctional crosslinking agent of copolymer (I) and

- diallyl maleate as a grafting agent in a molar amount from 0.05 % to 2.5 % of copolymer (II)

wherein said core is produced by simultaneously introducing the polyfunctional crosslinking agent and the diallyl maleate into the reaction mixture and the production of the covering is carried out at a temperature greater than that used for the preparation of the nucleus, and

b) 30 % to 10 % by weight of a shell grafted onto the said core composed of a polymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, or alternatively of a statistical copolymer of an alkyl methacrylate, the alkyl group of which has a carbon number ranging from 1 to 4, and of an alkyl acrylate, the alkyl group of which has a carbon number ranging from 1 to 8, containing a molar amount of alkyl acrylate ranging from 5 % to 40 %, or alternatively composed of a styrene-acrylonitrile copolymer.

72. (cancelled)

REMARKS

Claims 1-34, 36-39, 41-48, 71, and 72 are pending in the application

Claims 1-34, 36-39, 41-48, and 71 stand allowed.

Claim 72 stands rejected.

Claim 72 has been cancelled.

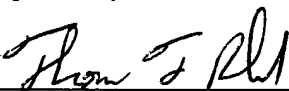
The Examiner requested that the term "CORN" in the title be corrected. Applicant has amended the title to properly read: "IMPACT ADDITIVE OF THE CORE/SHELL TYPE FOR THERMOPLASTIC POLYMERS".

Claim 72 stands rejected under 35 U.S.C. §102 and 103(a) as anticipated or obvious over Wang (USP 5,045,595). Claim 72 has been cancelled, making the only rejection to the claims mute.

All remaining claims: 1-34, 36-39, 41-48, and 71 stand allowed.

Since all remaining claims stand allowed, Applicant requests the Examiner to grant allowance to the present application containing the allowed claims.

Respectfully submitted,

  
\_\_\_\_\_  
Thomas F. Roland  
Attorney for the Applicants  
Reg. No. 42,110

Date: June 2, 2004

ATOFINA Chemicals, Inc.  
2000 Market Street  
Philadelphia, PA 19103-3222  
Tel (215) 419-7314  
Fax (215) 419-7075

**PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)**  
**(Large Entity)**

Docket No.  
**FR-AM0939 NP**

In Re Application Of: **BERTELO, et al**

Serial No.  
**09/088,707**

Filing Date  
**June 2, 1998**

Examiner  
**Jeffrey C. Mullis**

Group Art Unit  
**1711**

Invention:

**IMPACT ADDITIVE OF THE CORE/SHELL TYPE FOR THERMOPLASTIC POLYMERS**

**TO THE COMMISSIONER FOR PATENTS:**

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a response to the Office Action of 01/06/2004 above-identified application.  
*Date*

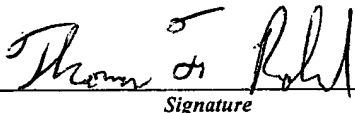
The requested extension is as follows (check time period desired):

☐ One month      ☒ Two months      ☐ Three months      ☐ Four months      ☐ Five months

from: 04/06/2004      until: 06/06/2004  
*Date*      *Date*

The fee for the extension of time is **\$420** and is to be paid as follows:

- ☐ A check in the amount of the fee is enclosed.
- ☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. **01-2717**
- ☒ If an additional extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to Deposit Account No. **01-2717**

  
*Signature*

Dated: **June 2, 2004**

**Thomas F. Roland, Esq.**  
**Reg. No. 42,110**  
**Atofina Chemicals, Inc.**  
**2000 Market Street**  
**Philadelphia, PA 19103**

I certify that this document and fee is being **FAxed**  
on **06/02/2004**

  
*Signature of Person Filing Correspondence*

**Michele T. Muller**

*Typed or Printed Name of Person Filing Correspondence*

CC:

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**REVOCATION OF POWER OF  
ATTORNEY WITH  
NEW POWER OF ATTORNEY  
AND  
CHANGE OF CORRESPONDENCE ADDRESS**

Application Number	09/088,707
Filing Date	June 2, 1998
First Named Inventor	Chris Bertelo
Art Unit	1711
Examiner Name	Mullis, Jeffrey C.
Attorney Docket Number	FR-AM0939

I hereby revoke all previous powers of attorney given in the above-identified application.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint the practitioners associated with the Customer Number:

31684

☒ Please change the correspondence address for the above-identified application to:☒ The address associated with  
Customer Number:

31684

OR

☐ Firm or  
Individual Name

Address

Address

City

State

Zip

Country

Telephone

Fax

I am the:

☐ Applicant/Inventor.☒ Assignee of record of the entire interest. See 37 CFR 3.71.  
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)**SIGNATURE of Applicant or Assignee of Record**

Name Mary Fay, Authorized Signatory, ATOFINA

Signature

Date

May 19, 2004

Telephone

(215) 419-7652

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.36. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.